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ABSTRACT

A national perspective on issues in graduate and professional education in California is provided with an emphasis on increasing the participation of minority students and women in advanced degree programs; assuring an adequate supply and quality of college faculty into the next century; and minimizing the adverse effects of growing loan burdens. The three sections focus on the following: (1) graduate and professional education in California (enrollments and degrees by field of study, participation of foreign students); (2) financing graduate and professional education in California (government fellowships and trainees; research and training assistantships; institutional grants and fellowships; loans; private sources of aid; aid sources for advanced degree students in California; differences between undergraduates and advanced degree students; doctoral, master's, and professional students' patterns of financing; and recent federal legislative changes); and (3) issues in financing graduate and professional education (student financial aid options; labor market intervention; increasing the participation of minorities and women; addressing concerns about the future size and composition of college faculty; and minimizing the adverse effects of growing loan burdens). Ten tables are included. (SM)

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THE EUREKA PROJECT

A Review of Student Financial Aid in California

After the Bachelor's:

Financial Aid for Graduate and Professional School Students in California

HE 021 747

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THE EUREKA PROJECT

A Review of Student Financial Aid in California

After the Bachelor's:

Financial Aid for Graduate and Professional School Students in California

April 1988

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PREFACE

Student financial aid has become a major and complex educational industry. This year in California alone expenditures will be approximately $1.5 billion in all forms of financial assistance—grants, loans, and jobs. It is not only large, it is also complex. Anyone who has been associated with student financial aid is soon struck by how complicated the rules and structure are and how the students and colleges must deal with a multitude of agencies and organizations.

Thirty years ago student financial aid in California was less than $10 million. The few government programs that existed were relatively simple in design. While funds were inadequate, the standards and procedures were comprehensible to all involved. Administration was, by today's standards, simple. Limited student financial aid, largely scholarships, was an activity funded by individuals, college endowments, and local groups.

Over the last three decades all financial aid has grown as governments have become major players and the composition and sources of aid have markedly changed. In the last ten years loans have replaced grants and scholarships as the principal form of student aid. With a massive infusion of loan funds through commercial lenders, the nature of student financial aid has changed.

As student financial aid has assumed a larger role in postsecondary education, it has become more important to review the policies that have undergirded it. Policies, either as specifically adopted or developed in an evolutionary way, need to be reviewed for their past effect, current value, and future utility. Problem policies need to be identified and policies appropriate for the balance of this century developed.

Concerns about student aid policies led to the creation of The Eureka Project, a privately organized, funded, and directed review of student aid policies in California. It is entirely funded by major grants from the James G. Irvine, Weingart, and the John Randolph Haynes and Dora Haynes Foundations, and by a supplemental grant from the Atlantic Richfield Foundation.

The Eureka Project is under the general direction of a board of directors, with more technical and specific advice to the project given by a steering committee composed of representatives of interested groups and institutions in California. A staff of consultants has come together to direct and write the various studies under The Eureka Project.

The Eureka Project is studying the financing of higher education opportunities in California and the impact of current financial aid programs upon the formal structure of higher education and students. There is concern that the door of educational opportunity may be closing, that the health and vitality of quality independent institutions could be at risk, and that the current student financial aid system has a wide range of unintended consequences.

The Eureka Project anticipates issuing approximately a dozen reports. These reports will endeavor to stimulate policy review of student financial aid and financing of higher education in California and will be offered by the Board of Directors as thoughtful documents for that purpose. The reports will not necessarily represent the views of members of the Board of Directors or of the four California foundations whose grants have made The Eureka Project possible.

This report, "After the Bachelor's: Financial Aid for Graduate and Professional School Students in California," is largely the work of Arthur Hauptman, who brought his experience from a national study for the Association of American Universities to a California situation. Valuable assistance in the development of this report was provided by Sam McCandless in the initial formulation of the project, and by Martin Kramer and John Vaughn in their reviews of drafts. Kate Jeffery of the University of California and Don Hills of the Student Aid Commission helped with the review of data.

The Eureka Project aspires to review how California student financial aid developed, what it has done, what it has not done and how it has served the public interest. The Eureka Project attempts to define issues and suggest policy guides for the future.

Arthur S. Marmaduke
Executive Director
The Eureka Project

EXECUTIVE SUMMARY

This report attempts to bring a national perspective to issues in graduate and professional education in California. In particular it examines three issues that state policymakers may wish to address:

- Increasing the participation of minority students and women in advanced degree programs, especially in the sciences and engineering;
- Assuring an adequate supply and quality of college faculty into the next century;
- Minimizing the adverse effects of growing loan burdens.

National and California Patterns

The financial support of graduate and professional school students in California is in most ways like that of advanced degree students across the nation.

- Research and teaching assistantships are the primary form of assistance for students in doctoral degree programs.
- Loans and employee educational assistance are the principal forms of aid for master's degree students.
- For students enrolled in professional school programs of medicine, dentistry, and law, loans are the predominant form of aid.

An important difference is that more institutional fellowships and grants per doctoral student are provided in California than in the nation as a whole. This appears to be largely a result of the very sizable commitment by the University of California to providing non-loan aid to its doctoral students.

Most of the aid that undergraduates receive is based on the financial need of the student. In contrast, merit-based aid in the form of assistantships and fellowships is much more important for doctoral students. Students in professional school and in master's degree programs are typically much more dependent on loans than are undergraduate students.

Increasing the Participation of Minorities and Women

In California and in the nation, there continues to be a significant underrepresentation of minorities in higher education. At each successively higher level of education, the proportion of minority students decreases. In California, the proportion of each non-Asian minority group enrolled in graduate and professional schools is one-half or less their share of undergraduate enrollments in the state. The participation of women in higher education has increased markedly over the past several decades, but they, like minority students, continue to enroll

disproportionately in what for them have been traditional fields of study.

To increase the participation of minorities in graduate and professional education, steps must first be taken to increase the number of minority students who receive a bachelor's degree. Over the past decade, the number of minority students who receive bachelor's degrees has not increased substantially. One part of the strategy must therefore be to augment financial aid and support services that enhance the enrollment and retention of minority students at the undergraduate level. Support at the undergraduate level would also appear to be a most promising strategy to increase the graduate enrollment of women in the fields where they are underrepresented.

Increasing minority participation in graduate and professional education must also involve encouraging a larger proportion of minority college graduates to continue their education beyond the baccalaureate. It does not appear that strategies to alter labor market conditions would be effective because competition for minorities with advanced degrees is already keen. A better strategy would appear to be enhancing the financial aid package and support services for minority students who enroll in advanced degree programs. This strategy would also appear to be promising for increasing the enrollment of women in graduate schools in field where they are underrepresented.

Ensuring An Adequate Supply of Future College Faculty

A projected increase in the number of faculty retirements over the next two decades and the decline in the number of doctorates awarded over the past decade have caused concern about a possible shortage in qualified applicants for future faculty positions. Although the concern about adequate numbers may be overstated, there appears to be a legitimate reason to worry about the quality of future faculty, in light of the smaller proportion of the best college graduates who are choosing doctoral programs.

Student choices regarding graduate school, however, appear to be more affected by current and future conditions in the academic labor market than by how education will be financed. Therefore, concerns about the composition of future college faculty can best be addressed through intervention in the academic labor market, rather than through increases in student aid.

Minimizing the Adverse Effects of Growing Loan Burdens

The trend toward increasing reliance on student loans is particularly pronounced for students enrolled in professional schools, where roughly three-quarters of all students borrow, and the cumulative amount borrowed often exceeds $30,000. The concern is that the growth in loan burdens is affecting students' decisions about whether to continue their education beyond the baccalaureate.

To address this concern, policymakers at the state level should consider the option of providing "low income protection" for borrowers whose debt service is high relative to their incomes after graduation. For those borrowers whose student loan debt service exceeded, say 10 percent, of income, the state could buy their loans and offer them extended repayment terms, graduated repayment schedules, or possibly income-sensitive repayments to help reduce the size of their loan repayments relative to their incomes.

Low income protection would have a distinct advantage over a program of loan forgiveness. Loan forgiveness applies to all borrowers in a category regardless of whether they actually need assistance once they complete their education. Low income protection would apply only to those borrowers who in fact needed the help.

FOREWORD

Graduate and professional education plays a vital role in the American system of higher education. Doctors, lawyers, professors, and scientists traditionally have received their specialized training at the post-baccalaureate level. Over the past several decades, an increasing proportion of business practitioners, teachers, and engineers have also used advanced degrees to gain entrance into their chosen careers or as a way to enhance their professional skills and status.

Universities, through their advanced degree programs and their attendant programs of academic research, are important contributors to economic growth. In California, one only has to look as far as Silicon Valley or the development of the airframe industry to find evidence of the importance of the relationship between graduate and professional education and the economic development of the state. Nationally, graduate and professional education has been a source of leadership and economic strength.

Despite the obvious importance of graduate and professional education, policymakers and educators have tended to pay relatively little attention to the ways in which students are encouraged to consider extending their education beyond the baccalaureate level. This lack of focus on financing issues in graduate and professional education is the result of several factors. First, the monetary benefits that accrue to individuals receiving an advanced degree in some fields are often so obvious and substantial that policymakers may feel they need not worry about attracting sufficient numbers of able students to enroll in graduate or professional school. The underlying belief would appear to be that market forces will take care of society's needs when it comes to post-baccalaureate education.

The type of aid received by graduate and professional school students may have something to do with its relative neglect. Aid for undergraduates expresses deeply felt concerns for equal opportunity. But students enrolled in doctoral degree programs receive most of their aid in the form of merit, not need-based fellowships and assistantships. Professional school students, on the other hand, depend primarily on loans, much more than either undergraduates or students in doctoral programs. The differences in the types of aid received tend to separate financial aid practitioners into specialists: aid administrators and others who are involved in undergraduate aid tend to spend relatively little time with graduate and professional school students.

There is a related reason why so little attention is paid to the financing of graduate and professional education. Relatively little information is collected on how students enrolled for advanced degrees finance their education. There is much more extensive data and analysis in connection with undergraduate student aid. The absence of solid information has, in turn, resulted in less discussion of the issues

surrounding the financing of a graduate or professional school education.

This report attempts to redress the lack of analytic attention to issues of graduate and professional education in California as part of the larger Eureka Project effort. Most of The Eureka Project reports justifiably focus mainly on issues relating to access and choice in undergraduate education. The purpose of this report is to highlight and discuss those issues which are most applicable to graduate and professional education.

The report is divided into three sections. The first section describes the characteristics of graduate and professional school students in California. The second summarizes available data on how they finance their educational and related costs. Wherever possible, the information on California students is compared to what is known about graduate and professional school students nationwide to see how the California experience compares with national trends.

The third section discusses a set of national issues in the financing of graduate and professional education that are also issues for California. The purpose of this section is to identify the mechanisms that are available to state policymakers if they wish to affect enrollment patterns in graduate and professional education.

1. GRADUATE AND PROFESSIONAL EDUCATION IN CALIFORNIA

In 1983, roughly 150 thousand students were enrolled in graduate or professional education in California, according to U.S. Department of Education statistics (see Table A).* This represented 10.8 percent of enrollments in graduate and professional schools nationwide, the same percent as the population of California is of the nation's population. But undergraduate enrollments in California were a substantially higher proportion of the national totals, 13.5 percent. Another way to realize the relatively large size of undergraduate enrollments in California is to note that graduate and professional enrollments were 8.6 percent of total higher education enrollments in California in 1983, compared to a nationwide 11.1 percent.

Women constituted 46 percent of California graduate school students in 1982, compared to 48 percent nationwide (see Table B). The percentage of women enrolled in professional schools was slightly higher in California (35 percent) than the national average (31 percent). As Table B also indicates, graduate students in California enroll full time in roughly the same proportion as the national average, but professional school students in California appear to be less likely to be enrolled full time than professional school students nationwide.

* The term graduate and professional education typically refers to activities related to an advanced degree beyond the baccalaureate level. Advanced degrees include Ph.D.'s, other doctorates, and master's degrees (which collectively constitute graduate education), and degrees earned in professional schools of medicine, dentistry, other medical-related fields, law, and theology. The distinction between graduate and professional education sometimes blurs, especially with respect to master's degrees in fields such as business, engineering, and architecture, where a master's degree in essence leads to entrance into a profession. In this report, we adhere to the convention used in the collection of federal government statistics which categorizes master's degree programs together with doctoral degree programs as part of graduate education. The 150-thousand figure for graduate and professional enrollments in California does not include some 30 thousand individuals who are designated as being unclassified post-baccalaureate students.

Enrollments and Degrees by Field of Study

Tables C through E present degrees awarded and enrollments in graduate and professional education in California as compared to national totals. As the tables indicate, psychology and engineering are the two fields where California appears to have a higher concentration than the national average, and education is a field where there is less concentration in California than nationally.

Table G indicates the ethnic composition of undergraduate, graduate, and professional school students in California in 1982, compared to nationwide figures and those for New York, the next largest state.

TABLE A
California and National Statistics on Population and Educational Participation, 1983

	California	U.S. Total	California Percent of U.S.
	(In Millions)		
Total Population	25.2	234.0	10.8%
Enrollment in Public, Elementary and Secondary Schools	4.1	39.3	10.4%
Enrollment in Institutions of Higher Education	1.7	12.5	13.9%
Undergraduate Enrollment	1.3	9.7	13.5%
	(In Thousands)		
Graduate School Enrollment	117	1105	10.6%
Professional School Enrollment	31	279	11.3%
Graduate and Professional School Enrollment	149	1383	10.8%
Graduate and Professional School Enrollments as a Percent of Total Enrollments	8.6%	11.1%	n.a.

Details may not add because of rounding.

Sources: Statistical Abstract, 1986, and Digest of Educational Statistics.

TABLE B
Proportion of Women and Full-time Students Enrolled in Graduate and Professional Education, 1982

	California	U.S.
Students in Graduate School		
Proportion who are women	46%	48%
Proportion who are full time	42%	41%
Students in Professional School		
Proportion who are women	35%	31%
Proportion who are full time	81%	91%
Students in Graduate and Professional School		
Proportion who are women	44%	44%
Proportion who are full time	48%	51%

Sources: Graduate Education and California Trends and Issues, CPEC, Hauptman, *Students in Graduate and Professional Education*, AAU, 1986.

TABLE C
Degrees Awarded, 1983-84
(In Thousands)

	California	U.S. Total	California Percent of U.S. Total
Bachelor's Degrees	88	974	9%
Professional Degrees	9	74	12%
Master's Degrees	32	284	11%
Doctoral Degrees	4	33	12%

Source: U.S. Department of Education, Digest of Educational Statistics, 1987.

TABLE D
Master's Degrees Awarded, 1981-82, by Selected Fields of Study

	California	U.S.	California Percent of U.S. Total
Agriculture & Natural Resources	378	4,163	9.1%
Architecture/Environmental Design	377	3,327	11.3%
Biological Sciences	580	5,784	10.0%
Business & Management	5,715	61,299	9.3%
Computer & Information Services	554	4,935	11.2%
Education	5,827	93,104	6.2%
Engineering	2,451	17,939	13.7%
Fine & Applied Arts	1,117	8,746	12.8%
Foreign Languages	230	2,008	11.5%
Health Profession	1,805	16,503	10.9%
Letters	827	8,226	10.1%
Mathematics	242	2,727	8.9%
Physical Sciences	543	5,514	9.8%
Psychology	1,575	7,791	20.2%
Public Affairs & Services	1,518	19,388	7.8%
Social Sciences	1,053	11,951	8.8%
All Fields	30,532	295,546	10.3%

Source: U.S. Department of Education, *Digest of Education Statistics*, and CPEC, *Graduate Education in California*, Trends and Issues.

TABLE E
Doctoral Degrees Awarded, 1981-82, by Selected Fields of Study

	California	U.S.	California Percent of U.S. Total
Biological Sciences	471	3,743	12.6%
Education	394	7,676	5.1%
Engineering	419	2,636	15.9%
Letters	135	1,681	8.0%
Mathematics	91	681	13.4%
Physical Sciences	450	3,286	13.8%
Psychology	660	2,780	23.7%
Social Sciences	370	3,065	12.1%
All Fields	4,407	32,707	13.5%

Sources: U.S. Department of Education, *Digest of Education Statistics*, and CPEC, *Graduate Education in California*, Trends and Issues.

TABLE F
Professional School Enrollments, 1982, by Selected Field of Study

	California	U.S.	California Percent of U.S. Total
Medicine	6,971	66,485	10.5%
Dentistry	2,265	22,621	10.0%
Veterinary Medicine	600	8,499	7.1%
Law	14,759	127,312	11.5%

Source: U.S. Department of Education, "Full- and Part-time Enrollments in Institutions of Higher Education for Selected Major Fields of Study and Level of Enrollment by Race, Ethnicity, and Sex, and By State or Other Area, Fall, 1982."

TABLE G
Fall 1982 Enrollment by Ethnicity

	Black	Asian	Hispanic	Native American	All Minorities	White	Non-Resident Alien	Total
Undergraduate Enrollments								
U.S.	9.7%	2.6%	5.6%	0.6%	18.5%	79.1%	2.7%	100%
California	8.5	9.0	11.2	1.4	30.3	66.7	3.1	100
New York	12.0	2.7	6.4	0.5	21.6	76.5	1.9	100
Graduate School Enrollments								
U.S.	4.2%	2.7%	2.6%	0.3%	9.8%	73.7%	16.5%	100%
California	3.3	3.5	6.2	0.4	13.5	72.9	13.0	100
New York	5.3	2.9	3.0	0.3	11.5	81.3	7.2	100
Professional School Enrollments								
U.S.	4.6%	2.9%	3.4%	0.3%	11.2%	87.7%	1.1%	100%
California	4.3	9.4	6.1	0.4	20.2	78.0	1.8	100
New York	3.8	2.6	2.7	0.2	9.3	90.2	0.6	100

Details may not add because of rounding.

Sources: *Professional Women and Minorities*, Fifth Edition, p. 17; Full- and Part-time Enrollment in Institutions of Higher Education, Fall 1982, U.S. Education Department; College and University Racial/Ethnic Distribution of Enrollment, New York State, Fall 1982.

The figures in Table G reveal several important points about the participation of minorities in higher education in California. First, minorities constitute a much larger share of enrollments in California than they do in New York or the nation as a whole. This is true at the undergraduate, graduate, and professional school levels. It is especially pronounced for undergraduate and professional school enrollments where the minority share in California is more than 50 percent greater than in New York or the United States.

Any discussion of minority participation in California must, of course, recognize differences in the ethnic composition of California's population in comparison with that of the nation. California has a much higher proportion of Hispanics and Asian Americans than the nation as a whole and the higher participation of minorities in California mainly results from larger Hispanic and Asian shares of enrollment. Black students constitute a smaller share of undergraduate and graduate enrollments in California than in the U.S. or New York. In professional schools, however, Black students' percentage of enrollments in California is larger than in New

York, but smaller than in the United States as a whole. In contrast, Hispanic and Asian Americans are a much larger fraction of undergraduate, graduate and professional school enrollments in California than in the nation as a whole or in New York.

Most important, the minority percentage of graduate and professional school enrollments in California is substantially smaller than the percentage of undergraduate students who come from minority groups. The proportion of each minority group enrolled in graduate and professional schools in California is one-half or less of their share of undergraduate enrollments in the state. The significant slippage in the participation of minorities between undergraduate and graduate and professional schools in California should be a cause for concern among policymakers. This issue is discussed in greater detail in the third section of this report.

Participation of Foreign Students

Hundreds of thousands of foreign students—individuals from other countries with temporary visas to study in this country—enroll every year in American institutions of higher education. The participation of foreign students is especially pronounced in graduate education in a number of scientific and engineering fields. Over half of the doctorate recipients nationally in some engineering fields are now foreign students, and the proportion in other scsientific and engineering fields is also high. In graduate programs not in the natural sciences and in professional school fields of study, foreign students are typically a small percentage of all enrollments. From the figures in Table G, it would appear that the share of foreign students in California enrollments at all levels of education is not substantially different from that for the nation as a whole.

At least two issues are raised by the high levels of participation by foreign students in American higher education. One is whether foreign students are depleting the financial aid that would otherwise be available to American students. That does not appear to be the case. Many, if not most, foreign students in graduate and professional schools are supported by their home governments. Federal government fellowship support is generally limited to U.S. citizens or to foreign students holding permanent residence visas. Foreign students are eligible and do receive research and teaching assistantships, but not in numbers that are disproportionate to their participation in particular fields of study. Foreign students do receive a substantial number of research assistantships, but that is at least partially a function of their enrollment in scientific and engineering fields where research assistantships are most plentiful.

Another issue is whether enough American students are being trained in the sciences and engineering to meet the academic and industrial needs of the nation. In this report, we do not attempt to answer this question of supply and demand, which has been discussed without resolution in a number of forums and continues to be a topic of great dispute. The question of what policies might be pursued if such shortages do exist is addressed in the third section of this report.

2. FINANCING GRADUATE AND PROFESSIONAL EDUCATION IN CALIFORNIA

Students enrolled in graduate and professional education in California may receive financial assistance of one or more of a number of types. These include government fellowships and traineeships, research and teaching assistantships and other work opportunities (including those provided by College Work Study), several kinds of loans, grants and fellowships funded by the institutions they attend, and private sources of aid, including employer educational assistance.

Government Fellowships and Traineeships

Graduate students attending institutions in California are eligible for both federal and state fellowships. More than a dozen federal agencies offer fellowships and traineeships including the National Science Foundation, the National Institutes of Health and the Department of Defense. Although in the past two decades the federal government has substantially reduced its support for graduate fellowships, more than $100 million is still spent nationwide for graduate fellowships and traineeships.

The largest statewide California program for graduate and professional school students is the Graduate Fellowship Program established in 1965. Although the initial rationale of the Graduate Fellowship Program was to increase the supply of faculty in the face of projected shortages, the program's purpose has been subsequently amended to include the purpose of increasing the participation of economically disadvantaged students. In 1984-85, these graduate fellowships amounted to $2.6 million for 805 recipients.

One way of measuring California's commitment to student aid for graduate and professional school students is to compare it to that of other states. Table H indicates that the $3.5 million that the state of California provided in 1986-87 in the form of need-based graduate awards was 13 percent of the awards that all states provided, slightly more than California's share of graduate and professional school enrollments. (It should be noted that these figures, either for California or the nation, do not include funds provided by public sector institutions, such as the University of California. This form of assistance is discussed in the section of this report on institutional grants and fellowships.)

Research and Teaching Assistantships

Assistantships for either research or teaching are one of the most common forms of financial assistance for students enrolled for advanced degrees. These assistantships are primarily made available to students enrolled in doctoral programs. Master's

TABLE H

State Funded Student Financial Aid, U.S. and California, 1986-87
Awarded Through a Central State Agency

	(In Millions)		
	California	All States	California as a Percent of All States
Need Based Undergraduate Awards	$131	$1,398	9%
Need Based Graduate Awards	3.5	27.4	12.8%
Need Based Graduate Awards as a Percent of All Need Based Awards	2.7%	2.0%	n.a.

Source: Annual Survey, National Association of State Scholarship and Grant Programs.

degree and professional school students receive relatively little of this form of assistance. Most of the funding for research assistantships comes from federal grants, although institutions typically provide substantial sums as well. Teaching assistantships, in contrast, are almost entirely funded by educational institutions themselves. Some graduate and professional school students earn a portion of their educational expense by serving as resident assistants or proctors in college and university housing facilities.

Graduate and professional school students are also eligible for funds in the federal College Work Study program, although typically most of the funds in this program are provided to undergraduates. Since 1980, institutions have been allowed to use College Work Study funds to pay graduate research and teaching assistants. The degree to which work study funds are used to finance assistantships, however, varies greatly by institution. Some institutions have used this mechanism extensively for graduate students, whereas others are reluctant to divert these funds from undergraduates.

Institutional Grants and Fellowships

Another major source of financial assistance for graduate students comes in the form of fellowships provided by institutions out of their own funds. In California, as mentioned before, the assistance provided by the University of California for graduate students far exceeds what the state government provides directly through its Graduate Fellowship Program. In 1984-85, the University of California reported that it provided $40 million in fellowship and scholarship assistance to its graduate students, more than ten times what was provided through the Graduate Fellowship Program by the state. Independent sector institutions provided an estimated $25 million to their graduate students in 1984-85. Relatively little grant assistance is provided by the California State University system to its graduate students.

Loans

Loans are increasingly the primary form of assistance for many students enrolled for advanced degrees. The principal source of loan assistance remains the Guaranteed Student Loan program. Other loans that are available to graduate and professional school students include the federal Perkins Loan program (previously called National Direct Student Loans), and the California Loans to Assist Students (CLAS) program, which is the state version of the federal Supplemental Loans for Students program. Students in the health professionals are also eligible for federal Health Education Assistance Loans (HEAL).

Graduate and professional school students enrolled in California institutions currently borrow on the order of $200 million annually.* A decade ago,

*Figures on graduate student borrowing are from *Student Borrowing in California*, California Student Aid Commission, Draft of January 11, 1988.

borrowing by students enrolled for advanced degrees in California probably totaled less than $10 million. About 60 percent of graduate and professional school students in California can be expected to borrow at some time, compared to 50 percent of undergraduates.

There are differences in the extent that advanced degree students in different educational sectors borrow. About half of the students enrolled for advanced degrees in the California State University system will borrow, at least once, 60 percent in the independent institutions, and nearly 70 percent in the University of California. Some of this variation is a reflection of different proportions of advanced degree students enrolled in professional schools and master's degree programs where borrowing is most frequent.

The disparity in borrowing patterns between advanced degree students and undergraduates is greatest at the University of California, where half of all undergraduates borrow, compared to the 70-percent figure for graduate and professional school students. Independent institutions are the only sector in California where undergraduates appear to be more likely to borrow than students enrolled for advanced degrees. Sixty-five percent of undergraduates enrolled in independent institutions in California in 1985-86 reported some amount of student debt, compared to the 60-percent figure for graduate and professional school students in that sector.

National figures also indicate that borrowing patterns differ dramatically by type of degree and field of study. Professional school students are the most likely to borrow; over three-quarters of the students enrolled in medicine, dentistry, and law borrow. About half of students enrolled in master's degree programs borrow. In contrast, one-third or less of students enrolled in doctoral programs borrow.

Private Sources of Aid

Financial assistance is also made available to advanced degree students through corporations, foundations, and other private sources in the form of fellowships, tuition assistance, sponsored research, loans, and other mechanisms. The largest source of private aid for graduate and professional school students is employer-paid educational benefits, mostly through the payment of tuition for employees taking courses or pursuing an additional degree. Employer-paid assistance is especially important for master's degree students, particularly in education and business fields of study where receipt of a master's degree can make a big difference, both in terms of salary and career advancement. Nationwide, we estimated that employers paid half a billion dollars in 1984-85 for tuition and other education benefits for employees who were enrolled in advanced degree programs. We were not able to develop a figure for California, although based on the national estimate, it would seem reasonable to assume that at least $50 million was spent for employer educational assistance for advanced degree students in California.

Aid Sources for Advanced Degree Students in California

Table I summarizes the major sources of assistance available to graduate and professional school students in California in 1984-85. (Employer educational assistance is not included in the table because of inadequate data.) The total amount of aid awarded exceeded $400 million. Roughly half of the funds went to students enrolled at the University of California, slightly less than half to students in independent institutions, and about five percent to students in the California State University system.

The type of aid received by graduate and professional school students in California is indicated in Table J. Most of the figures in Table J are estimates. Accordingly, not much should be made of small differences between the financing patterns of students in California and nationally. Two significant differences, however, do appear to exist. California graduate and professional school students appear to depend less on loans than their counterparts elsewhere. At the same time, more institutional aid per student is provided in California than in the nation as a whole. This greater use of institutionally funded aid would appear to be largely a function of the very sizable commitment of the University of California to provision of aid for doctoral students.

Differences Between Undergraduates and Advanced Degree Students

The financing patterns of graduate and professional school students differ in some fundamental

TABLE I

Major Types of Financial Aid for Graduate and Professional School Students in California, 1984-85

(Dollars in Millions)

	All California	University of California	California State University	Independent*
Government Fellowships and Traineeship	21	11	1	9
Assistantships and Work Study	135	91	1	43
Loans*	178	53	20	105
Institutional and Private Grants and Fellowships	78	48	n.a.	30
Total	412	203	22	187

*Estimates

Sources: *Student Financial Aid in California*, California Postsecondary Education Commission, *Report on Student Aid*, University of California 1985-86; *Higher Education Student Assistance in California by Program and Segment*, California Student Aid Commission; *Independent Higher Education in California, 1982-84*, CPEC, *Federal Support to Universities, Colleges and Selected Non-Profit Institutions, Fiscal 1985*, National Science Foundation; *Student Borrowing in California*, California Student Aid Commission, January 11, 1988 Draft.

TABLE J

Comparison of Financial Aid Resources of Graduate and Professional School Students in California and the United States

(Dollars in Millions)

	California, 1984-85		United States, 1984	
		Percent of Total		Percent of Total
Government Fellowships and Traineeship	$ 21	5%	$ 170	4%
Assistantships and Work-Study	135	33%	1,625	33%
Loans	178	43%	2,750	56%
Institutional and Private Grants and Fellowships	78	19%	360	7%
Totals	$412	100%	$4,905	100%

Sources: For California, same as Table I; for U.S., Hauptman, *Students in Graduate and Professional Education*, Association of American Universities, 1986.

respects from the ways undergraduates pay for their education. One of the most obvious differences is in the use of assistantships. As the preceding section indicates, research and teaching assistantships constitute one-third of all the aid that graduate and professional school students receive, both in California and nationwide. Assistantships are an even larger share of the aid that doctoral students receive. In contrast, assistantships (though not earnings as such) represent a minimal source of aid for undergraduates.

Another major difference between undergraduates and students enrolled for advanced degrees is the greater amount of merit-based aid awarded graduate students. Since the adoption of the need-based aid system in the 1950's, the bulk of aid for undergraduates has been provided on the basis of the financial need of the student. In contrast, although a system for the analysis of the financial need of advanced degree students has been developed along the lines of those used for undergraduate aid, most of the non-loan aid provided to advanced degree students is not need-based. Instead, most aid that graduate and professional school students receive is in the form of fellowships or assistantships that are awarded to support and encourage promising students.

Doctoral, Master's, and Professional Students' Patterns of Financing

Borrowing patterns are the most obvious area of difference among the ways that doctoral, master's degree, and professional school students finance their education. Doctoral students depend principally on fellowships and assistantships to finance educational and living costs. Master's degree students, many of whom are part-time students working full time, principally use loans and employee educational benefits to pay their costs. Loans are the predominant source of funding for professional school students, who mostly attend on a full-time basis with relatively little opportunity to work. Very little is available in the form of fellowships, assistantships, or employer-paid benefits to professional school students.

These differences can be seen both in California and nationally. For students enrolled in academic degree programs at the University of California in 1984-85, assistantships represented over half of total aid. Grants and fellowships were one-third of their aid, while loans represented less than one-sixth of the total. In contrast, for medical and law students at the University of California in that year, loans represented roughly three-quarters of total aid. In California State University, where all graduate school programs are for master's degrees, loans represented 90 percent of total aid in 1984-85.* No similar data exist for advanced degree students at independent institutions in California, but national data suggest that the patterns are similar, except that loans represent a larger portion of the aid package for students in all fields of study at independent institutions.

Looked at from another angle, students enrolled in academic degree programs at the University of California in 1984-85 received 70 percent of the fellowships provided by the University to advanced degree students, over 80 percent of the research assistantships, and over 90 percent of teaching assistantships. These academic degree students took out less than one-third of the loans borrowed by all advanced degree students enrolled at the University. Medical school students, on the other hand, received seven percent of the fellowships and 20 percent of the loans. Again, law students received three percent of the fellowships and took out 13 percent of the loans.

Recent Federal Legislative Changes

Recent federal legislation contains several provisions which are likely to have an impact on how graduate and professional students finance their education in the future. One such provision changes the definition of financial independence as it applies to advanced degree students, another alters the rules for deducting interest on student loans, and a third increases the taxation of scholarships and fellowships.

Financial Independence. The 1986 amendments to the Higher Education Act revised the way in which financial independence is defined for students enrolled for advanced degrees. Previously, graduate and professional school students had to meet the same criteria as undergraduates: not being claimed as dependents on their parents' tax returns, non-residence in their parents' home, and the absence of substantial parental financial support.

The debate on this legislation moved in the

**Student Financial Aid in California,* CPEC, June 1986, pp. 48-49.

direction of presuming that all advanced degree studenst are financially independent. This legislative thrust was intended to reflect the different assumptions that society makes about parental responsibility for paying undergraduate and graduate costs of attendance. The final legislation calls for a general presumption of independence for graduate and professional school students, but financial aid administrators are given the authority to decide otherwise. Since most graduate and professional students were already judged to be financially independent, this legislative change should have relatively little impact on the aid received by advanced degree students.

Deductibility of Interest on Loans. The recent tax reform legislation contains several provisions which will affect the ability of graduate and professional students to pay for their education. One is the removal of deductibility of interest on consumer loans, including student loans. This change in the tax law will, in effect, increase the cost of debt service on student loans. Professional school students will be particularly affected by this change for two reasons. First, students in medicine, dentistry, and law as a group borrow the most, and therefore would have had the most interest to deduct. In addition, these students have the highest after-graduation incomes, and, thus, the state and local taxes these students pay make them the most likely to have enough deductions to itemize.

Taxation of Scholarships and Fellowships. Another provision in the tax reform legislation would tax all or part of fellowships and assistantships as income to the student. Previously, only compensation for services that were not required as part of the degree program were counted as taxable income. Under the new provision only degree candidates would quality for tax exemption and only the aid that was attributable to tuition, fees, books, and equipment would be excludable from taxable income. The provision that excluded an assistantship from income if it was a requirement for a degree is eliminated by the tax reform legislation. These changes would have the greatest impact on doctoral degree students who receive the lion's share of fellowships and assistantships newly subject to taxation, provided they have sufficient income to owe taxes.

Nationwide, full implementation of the provisions for the taxation of scholarships and assistantships would result in additional taxes for students in excess of an estimated $100 million per year. For California students in advanced degree programs, this translates into additional taxes of at least $10 million, or about five percent of the total non-loan assistance that these students currently receive. Because of the potential impact of these provisions on the financial situation of students, however, they have generated considerable controversy and may well be revised or rescinded.

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3. ISSUES IN FINANCING GRADUATE AND PROFESSIONAL EDUCATION

At the national level and in California, a number of issues have been raised regarding graduate and professional education and student financial aid. This section addresses three of these issues:

- The problem of how to increase the participation of minorities and women in graduate and professional education, especially in the sciences and engineering.
- The need to assure the numbers and quality of college faculty that will be required in the future by attracting more of the best college graduates into academic careers.
- The concern to minimize the possible adverse effects of growing reliance on student loans.

The purpose of this section is to describe why these issues have emerged as public policy concerns and to examine what options are availble to state policymakers in addressing them.

Before discussing each of these issues, however, it is first useful to identify and evaluate generically the ways in which state policymakers can influence trends in graduate and professional education. Two basic strategies exist: one is to alter student aid policies to affect the decisions that students make. The second is to intervene in the labor market for people who receive advanced degrees. Within each of these two basic strategies, a number of policy options are available.

Student Financial Aid Options

An extensive menu of student aid policy options exists, including the use of grants and fellowships, assistantships, other work opportunities, and loans.

Grants and Fellowships. One of the most obvious and frequently used policy options for influencing the enrollment decisions of graduate and professional school students is increasing the availability of fellowships. This option can take any of a number of forms:

- An existing grant or fellowship program can be expanded to allow a larger number of awards, in the hope of encouraging more students to enroll.
- In other instances, it may be more sensible to increase the dollar amount of awards rather than the number of awards.
- The eligibility rules for grants or fellowships can be changed. For example, the test of financial need can be modified to make a program more or less targeted on financially needy students. Or, if there is a desire to attract a more national student body, state fellowships could be made available to non-California residents. Alternatively, if there is a desire to encourage greater mobility of students, fellowships could be

provided to California residents who choose to attend out-of-state institutions.

- A new fellowship program can be created that provides funding to students in designated fields of study. This is a common practice at the federal level, but occurs far less often in states where financial aid is generally not field-specific.

Assistantships and Other Work Opportunities. As the second section of this paper points out, research and teaching assistantships are the most common form of aid for students enrolled in doctoral programs, but represent a small share of aid for master's degree candidates and students enrolled in professional school programs. The state could provide additional funds for research and teaching assistantships. It could also extend this assistance to students in fields of study where assistantships are not typically available. For example, if it were decided that research in the arts and humanities should be more encouraged, research grants might be provided in drama, fine arts, and the like, with the result that additional research assistantships would be provided to graduate students in these fields of study.

Similarly, the number of teaching assistantships might be increased. This could have the effect of improving the quality of college teaching in the long run, because more doctoral students would have the opportunity to hone their teaching skills before receiving their degree. But if more teaching assistants substituted for regular faculty, then undergraduate contact with faculty would decrease.

Loans. At the graduate and professional level, growth in the use of loans has been greatest among students enrolled in master's degree or professional school programs. The growth in the use of loans has generally not been the result of explicit policy decisions to add to the debt burden of students. Rather, more loans have generally been the unintended result of a shrinkage in the availability of fellowships or assistantships relative to the growth in the costs of attendance in graduate or professional school programs.

Whatever the reason for the increased use of loans, efforts should be undertaken to ensure that the increased borrowing does not adversely affect the financial situation of students. One such effort would be to augment the funding of fellowships or assistantships to reduce the need for students to borrow. Another possible approach would be to establish a policy of loan forgiveness for students who entered designated fields of study, who would have their loan burdens reduced. Still another possibility is to provide relief to borrowers who find their debt service difficult to repay relative to their incomes once they complete their education.

Labor Market Intervention

For students considering whether to continue their education beyond the baccalaureate level, one of the critical variables—perhaps the most important one—that determines their enrollment decisions is the perceived condition of the labor market. How many jobs are available for students receiving a degree in a particular field of study relative to the number of potential job applicants? How does the salary and other compensation compare with those of other professions? These are pivotal concerns for students as they make their educational decisions.

Labor market intervention can come in one of two basic forms.

- One is to create new jobs in the hope that the availability of more positions will encourage more students to enroll and receive advanced degrees needed to fill those jobs. Obviously, this approach should only be used when the number of job applicants in a field exceeds the number of job offerings, and labor force intervention can be justified because of some failure of market forces. The increased use of postdoctorates, especially in some natural science fields, is an example of what happened when a long-term labor market strategy is not employed. Many of the students who take postdoctorates find themselves in a holding pattern because of the absence of adequate permanent employment opportunities.
- The other technique is to increase the pay scales in designated professions. This strategy makes sense in those instances when under current labor market conditions, relative pay levels are making some professions less attractive than others.

There are also instances in which it is sensible to combine student aid and labor force intervention strategies. One obvious example is the forgiveness of student loans that is occasionally provided to encourage individuals to enter designated shortage professions such as teaching.

From the perspective of state policymakers, one distinction between financial aid and labor force intervention should be kept in mind. It is typically not feasible to direct recipients of student aid to remain in state once their education ends. Thus, a student aid strategy will generally result in a certain amount of "leakage," as some recipients take the benefits of their education out of the state. In contrast, steps that affect the nature of the labor force have the advantage from the state's perspective of keeping the beneficiaries within the state as long as the jobs or salary enhancements apply to positions within the state.

In this important regard, federal and state policymakers face a very different set of considerations. Federal policymakers need not worry about the effects of interstate movements of students; the benefits of financial aid will still occur within their sphere of concern. In contrast, state policymakers can well find themselves in the position of providing aid to students who do not remain in the state once they complete their education. Labor market intervention strategies hold an advantage over student aid approaches for state policymakers in this respect but they are often much more costly.

The degree to which labor market considerations play a role in a student's educational decisions is one of the primary differences between undergraduate students and those enrolled for advanced degrees. Freshman applicants often do not know what their major field of study may be, let alone what jobs or careers they may have once they graduate. Their choice of college is often unrelated to considerations of what jobs they may have once they complete their education. In contrast, college graduates considering graduate and professional school programs are considerably more sensitive to labor market considerations of pay, job availability, and quality of life.

As a result of these differences, the efficacy of a strategy designed to intervene in the labor market varies between undergraduates and students enrolled for advanced degrees. It makes little sense to alter the condition of the labor market in order to affect the decisions of undergraduate students. Most of those students will not change their college-going decisions on the basis of labor market conditions in a particular field. (The principal exception to this, of course, is students enrolling in postsecondary vocational programs for whom labor market considerations are very important.) Graduate and professional school students, on the other hand, are likely to be influenced by even slight changes in perceived labor market conditions.

Care must be taken, however, if educational policies are linked to labor market conditions, because these conditions are difficult to predict and can change in a fairly short period of time. Students may be encouraged through the provision of student aid to enter a particular field of study with the implicit or, in some cases explicit, promise of a job upon graduation. These students may then be bitter and resentful if the promised job is not available when they complete their educations.

Further, it would be difficult in many cases to influence the labor market to an extent that would make a difference in the employment prospects for students in a given field. Labor market conditions are determined by a wide variety of factors, and the ability to influence these conditions in any major way through public policies is typically limited. Moreover, a considerable amount of time is likely to elapse before the impact of a policy can be discerned in the condition of the labor market. Therefore, labor market intervention strategies should be limited to those cases where governments do play a fairly substantial role in the determination of either supply or demand in that particular marketplace, and where it is reasonable to expect that government intervention could have an impact within a relatively short period, say five years or less.

The market for faculty may be one of those limited number of instances where labor force intervention by public policymakers is feasible. The potential impact of governmental actions, primarily at the state level, is relatively large, at least on the demand side of the equation, where public institutions are one of the primary employers. It is also true that changes in state government policies can have a relatively quick effect on conditions in the academic labor market. If a state decides to change either what it pays faculty at public institutions or the number of faculty, the impact of these changes in policy will be felt within a period of several years.

Increasing the Participation of Minorities and Women

As the statistics in the first section of this report make clear, there is a significant underrepresentation

of students from minority groups in graduate and professional school programs in California. This is true nationwide as well. It appears that the growth of minority undergraduate enrollments has slowed and that little of whatever progress has been achieved in increasing the participation of minorities at the undergraduate level has been carried forward to graduate and professional schools.

At the national level, one of the principal reasons for the underparticipation of minorities in graduate and professional education is the relatively small increase in the number of minority students receiving undergraduate degrees. Despite a relatively large increase in the number of minorities graduating from high school, the number of Blacks and Hispanics receiving baccalaureates has not increased commensurately. The overwhelming impression left by the national and California data is that the participation of Black and Hispanic students decreases at each successive level of education. The situation with Asian Americans is the opposite: their share increases at each higher rung on the education ladder.

Another concern is that minority students continue to enroll predominantly in what have been for them traditional fields of study. Blacks and Hispanics in graduate and professional schools enroll most often in education and the social sciences. Asian Americans enroll in greater proportions in the natural sciences and engineering. Thus, a successful effort should aim not only at increasing the participation of minorities in graduate and professional school programs, but also at increasing their concentration in what have been for them non-traditional fields of study.

The difficulties in increasing the participation of minorities in graduate and professional education cannot reasonably be traced to lack of demand for these students. The competition for able minorities who hold advanced degrees is keen. It is especially intense in the sciences and engineering, but the job prospects in other fields also appear to remain good for minority students. Thus, it would not seem appropriate to emphasize labor market intervention as the primary means for increasing the number of minorities who enroll in graduate and professional programs.

The focus of attention, instead, needs to be on how to increase the number of minority students who receive a bachelor's degree and who have had the requisite curriculum for post-baccalaureate work and on convincing a larger proportion of these students to continue their education beyond the baccalaureate level.

The number of minority students receiving bachelor's degrees has barely increased over the past decade. If the potential pool of applicants for graduate and professional school does not increase, it is difficult to see how the number of minorities enrolling in advanced degree programs will expand significantly. Therefore, augmenting financial aid programs and related support services efforts that enhance undergraduate enrollments and degree completion by minority students must be an important component of any strategy for increasing the number of minorities in graduate and professional education.

Another important part of the solution is to target additional financial support toward minorities who enroll for an advanced degree. Given the competition for minorities in the job market, sufficient financial aid must be provided in order to make graduate and professional education an attractive alternative. Given limited governmental and institutional resources, it is unrealistic to expect that student financial aid for graduate training can make up entirely for the salary differences that these students will face when they complete their baccalaureates. But it is important that these students be made aware early in their college careers that substantial fellowship and grant aid would be available to them if they choose to continue their education.

In contrast to trends in minority participation, the proportion of women in higher education has increased significantly over the past several decades. Women now receive one-half of all bachelor's and master's degrees awarded (up from one-third or less two decades ago) and one-third of all doctorates and professional degrees (up from less than one-tenth in 1965). For women, the issue is not so much the overall number of students as it is their continued underrepresentation in scientific and engineering fields of study.

In dealing with problems of the underrepresentation of minorities and women, state policymakers might wish to look to the federal government for possible models of intervention. Several federal programs aimed at increasing participation of minorities and women are currently on the books. One is the Patricia Roberts Harris Fellowship program, formerly known as the Graduate Professional Opportunities Program (GPOP). This program specifically targets fellowships for graduate or professional school study on women and minority

students. Another newly authorized federal program is entitled Grants to Institutions to Encourage Minority Participation in Graduate School. It would attempt to identify students with academic potential in their sophomore or junior years and provide undergraduate assistantships, financial aid, and support services to encourage these students to enter academic careers.

The federal programs for graduate and professional school students that are already authorized are designed to cover the range of needs for financial aid and support services that could serve to increase the participation of minorities and women in targeted fields of study. These federal programs, however, have suffered from chronic underfunding. State policymakers could seek to fill the void created by federal budget stringency. State programs designed along the lines of the federal ones could do much to increase the participation of women and minorities in graduate and professional education, or the state might develop creative new approaches worked out with campus officials who are grappling with these problems.

Addressing Concerns About the Future Size and Composition of College Faculty

The number of faculty retirements will increase in the next decade as the large numbers of faculty who were hired in the growth decades of the 1950's and 1960's begin to reach retirement ages. The number of doctorates awarded peaked in the mid-1970's and has declined moderately in the past decade. The decline in the number of students receiving doctorates has been a reaction in part to a deterioration in academic labor market conditions over the past two decades. The anticipated acceleration in faculty retirements, combined with the decrease in the number of students receiving doctorates, has led some observers to conclude that there will be a shortage of qualified applicants for available faculty slots over the next several decades.

This conclusion may not be justified. Even with decreases in the number of Ph.D.'s awarded, there continues to be stiff competition for faculty positions in most disciplines. Engineering and some of the physical sciences are the exception, where there is already a shortage of applicants for available positions. The most likely prospect is that in disciplines where shortages of qualified applicants already exist, the shortages will intensify. Undergraduate enrollments in the sciences and engineering will probably continue to rise, increasing the demand for faculty in these fields of study. At the same time, industry's need for growing numbers of qualified workers will continue to deplete the supply of individuals entering academic careers in engineering and high-demand scientific fields. In other disciplines, however, it seems unlikely that widespread shortages will emerge, at least through the end of this century.

The quality of individuals entering academic careers may be of greater concern than the number of entrants. There is a widespread perception that over time a smaller proportion of the best college graduates are choosing academic careers. At least two recent studies appear to confirm this perception. Both of these studies indicate that a smaller proportion of today's best college graduates (as measured by class rank or awards) are choosing academic careers than was the case in previous decades.*

Financial aid policies have no doubt played a role in the evolution of concerns about both the quality and quantity of students entering doctoral programs. The substantial reduction in the number of graduate fellowships over the past two decades and a reluctance to rely on additional loans has contributed to the decline in the number of students entering academic doctoral programs.

On balance, however, labor market considerations are probably a more important factor than financial aid in the decisions of students to enter doctoral programs. After a number of years of dire predictions about the academic labor market, students appear to have finally received the message. Higher salaries in the professions, combined with unfavorable academic labor markets, have apparently convinced a growing number of students to attend professional schools despite the higher debt burdens that they are likely to incur. It also appears to be the case that debts accumulated as undergraduates are serving as a deterrent to some students from continuing their education. They may feel that their future salaries as academics will not be large enough to pay off the loans they borrowed as undergraduates.

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*Bowen, Howard, and Schuster, Jack, *American Professors*, Oxford University Press, 1986; and the Consortium on Financing Higher Education, *The Highest Achievers: Post-Baccalaureate Enrollment of Four Classes Between 1956 and 1981*, January 1985.

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In these circumstances, increasing financial aid is likely to have limited success in increasing the number or improving the quality of students choosing academic careers. A student who is facing a lifetime salary differential of $10,000 to $20,000 or more per year is not likely to be heavily influenced by the offer of a fellowship of $5,000 to $10,000 for several years of graduate study. Put another way, not many of the students who are willing to incur debts in excess of $30,000 to attend professional programs in medicine or law are likely to change their decision on the basis of a fellowship offer and to enroll instead in a doctoral program.

A more successful strategy for attracting more of the best college graduates to doctoral programs would be to intervene in the academic labor markets to the extent possible. The state has several options in this regard. One is to create additional faculty positions in public sector institutions. If it is constitutional, matching funds could also be provided to independent sector institutions for the purpose of establishing faculty positions in selected fields of study. This approach should be limited, however, to those fields of study in which qualified applicants far exceed the number of available slots.

The other means of labor market intervention would be to increase the pay of faculty in those fields of study such as engineering and some of the physical sciences where current pay scales are not competitive with those of industry. Salary augmentation in designated fields of study is already occurring at most colleges and universities nationwide. It could, of course, be used more extensively. Balanced against the need to attract more faculty in shortage fields must be considerations of morale as differentials widen between faculty positions in different fields. In addition, there are limits to the efficacy of this approach. Given the large differentials between academic and commercial salary scales, it may not be possible to close these differentials, given the limitations in state resources. At some point, potential faculty must be attracted by considerations other than salary.

Another factor that could influence conditions in the academic labor market is the marked increase over the past decade in the average time-to-degree in a number of fields of study. These increases in time-to-degree produce a lag in the pipeline for future faculty as well as influencing student decisions about whether to enter a doctoral program.

One of the reasons why time-to-degree has increased is the reduction of fellowships and other non-loan support for doctoral students, especially while they are working on their dissertations. To support themselves and their families, many of these students are forced to seek employment in non-related fields while they work on their dissertations. This diversion of time and energy serves to extend the time-to-degree for these students.

One way to shorten the length of time-to-degree, if that is a desirable policy option, is to increase the dollar amount of fellowships and to extend the length of time that grant support is provided to doctoral students. This solution, however, may be impractical because of budgetary limitations.

A next best solution might be to augment the number and amount of assistantships that are provided to doctoral students who are in the dissertation phase of their studies. While it is true that the employment requirements in these positions would take time away from research and writing, the benefit would be that students would at least be spending time in their field of study, rather than in non-related fields of employment.

Minimizing the Adverse Effects of Growing Loan Burdens

In the past decade, there has been a growing reliance on loans as the primary mechanism for financing higher education. Nationwide, loan volume has grown from about $2 billion in 1976 to roughly $10 billion in 1986, a five-fold increase over the past decade. This growth in the use of loans, which has been amply documented in recent years, has led to growing concerns about the possible adverse effects of mounting debt burdens.

One fear is that higher debt levels will lead to greater default rates, although available research suggests that the likelihood of default actually decreases with the amount borrowed. A more legitimate concern is that students' educational and career decisions will be influenced by prospective debt burdens. Students may choose more lucrative careers in order to enhance their ability to repay their loan obligations. Or, students may forego further education because of the prospect of assuming more debt.

Professional school students in medicine, dentistry, and law borrow the most. Their average student debt exceeds $25,000, and it is not uncommon

for these students to borrow in excess of $50,000. Students enrolled for master's degree programs in business, education, and other fields are borrowing in higher proportions and in growing amounts. Students in doctoral programs, by contrast, are the least likely to borow, in large part because of the expanded availability of research assistantships and the continued availability of teaching assistantships. It may be that for students considering doctoral programs, their undergraduate debt burdens are more of an impediment than the additional debt they would accumulate in graduate school.

These national trends in borrowing appear to be occurring in California as well. The median cumulative amount borrowed (including students who did not borrow) was less than $4,000 for master's and doctoral degree students in 1985-86, whereas the median amount of cumulative debt for medical school students was in excess of $10,000. Less than five percent of doctoral and master's degree students borrowed in excess of $20,000, whereas over 30 percent of medical school students borrowed more than $20,000.*

Despite the rash of publicity on growing debt burdens, however, available statistics do not indicate a crisis in student debt burdens. In California, nearly half of graduate and professional school students do not borrow at all; one-quarter or less borrow more than $10,000. The most borrowing is done by professional school students, whose after-graduation incomes usually can most easily pay the debt service entailed by high loan burdens.

In short, at the present time, it would appear that most students enrolled in graduate and professional school programs in California can afford their debt service obligations once they graduate. Although current debt levels do not appear to justify a crisis attitude, there is still reason for concern about the future capacity of students to handle their repayment obligations. Debt burdens have been growing over the past decade. A continuation of this trend could spell difficulties in repayment for a growing number of students.

Moreover, the prospect of high debt repayments does appear to be convincing students to enter professions that will allow them to repay their debts. The rapid growth in debt burdens is of particular concern in fields where income may not be sufficient to cover debt service for student loans. A student with a debt level in excess of $10,000 is likely to find that teaching or other low paying public service careers will not yield an income sufficient to pay his or her student loan debt service obligations.

An option is available to state policymakers that could address this concern: the state could offer to help students with debt burdens that are high relative to their incomes. Under such an arrangement—which might be termed "low income protection"—the state could offer to buy the loans of these students from the current loan holders. The state could then offer these students extended repayment terms, a graduated repayment schedule or permit income contingent repayments in order to help reduce loan repayments during periods that debt service is high relative to income.

While a number of states have made provision for loan forgiveness for teachers and selected other professions, only one has established a program which helps borrowers on the basis of their debt service relative to their post-graduation incomes. The state of Minnesota has developed a program in which borrowers in selected health profession fields can apply for assistance if their debt service payments exceed 10 percent of their income. For these borrowers, the state will make alternative financing arrangements and will pay the amount of their repayment that exceeds 10 percent of their income.

The approach of low income protection described above has at least two advantages over the typical loan forgiveness procedure. First, loan forgiveness programs require that students entering a particular profession be designated as beneficiaries before they actually enter the labor force. By the time that a student is ready to benefit, labor market conditions may have changed substantially from when the policy was implemented. There may no longer be a shortage, but loan forgiveness would still have to be provided. A program of low income protection would apply only to those borrowers who need the help once they enter the labor force.

Second, loan forgiveness must by its nature apply to an entire group of students, even though some of those students will not need the assistance based on their post-graduation incomes and debt service levels. Loan forgiveness for teaching, for example, applies to all teachers who were granted forgiveness, even those whose income is more than sufficient to repay their loans. In contrast, low income protection would apply only to those borrowers who need the

Student Borrowing in California, op. cit., pp. 95-96.

assistance once they are out in the labor force and their incomes are, in fact, not high enough to cover their debt service.

Conclusion

The aim of this report has been to bring a national perspective to the condition of graduate and professional education in California and to consider whether national trends and conditions also apply to the California experience. It has also been our objective to identify several national issues in graduate and professional education that merit the attention and the serious consideration of state policymakers.

All too frequently, reports examine issues which are challenging and intellectually interesting, but outside the ability of a given set of policymakers to influence. We have endeavored in this report to limit ourselves to issues that can in fact be influenced by state policymakers.

Each of the three issues discussed in the third section of this report represent an issue on which state policymakers can make a difference. Increasing the participation by minorities and women in graduate and professional education, ensuring the adequacy of future faculty, and offsetting the adverse effects of growing loan indebtedness are such issues. In this report we have attempted to outline how California policymakers can address them.

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